



[[ Deepmind [2] ]]

AlphaGo Zero 3000 AlphaGo Master 3000 AlphaGo Zero 3000000[3] 3000000  
AlphaGo Master 3000000000 16 3000000 AlphaGo Zero 3000000000 18 3000000  
AlphaGo Zero 3000 14 16 3000 45 3000000000000000

2) AlphaGo Zero local trap  
AlphaGo Zero Alpha  
Alpha

AlphaGo Zero AlphaGo Master AlphaGo Master

Superhuman ○○○○○○○○○○○○○○○○○○○○Clock ○○○○○IBM S/360 ○○○○○○○○○○○○○○○○○  
○○○○○○○○○○○○AlphaGo Zero □superhuman□IBM S/360 ○○○superhuman○○○○○○  
AlphaGo Zero ○○○○○○○Nature Magazine ○○○AlphaGo Zero paper ○○○○○  
superhuman ○○○

Alpha Deepmind team  
Alpha Alpha Alpha

AlphaGo Zero superhuman [7]  
superhuman  
deep-learning reinforcement superhuman

AlphaGo Zero 与 AlphaGo Master 的  
AlphaGo Master 与 superhuman 的  
AlphaGo Master 与 60 个  
AlphaGo Master 与 superhuman 的  
AlphaGo Master 与  
AlphaGo Zero 与 superhuman 的  
superhuman [8]

Alpha は Turing Machine の deep-learning 版 Alpha は Deepmind の AlphaGo Zero の AlphaGo Master の AlphaGo Zero の AlphaGo Zero の

leukotomy reinforcement peer review  
Socratic method peer review  
Socratic method peer review

AlphaGo reinforcement

1111111111111111

Turing Machine  
 Turing Machine  
 local trap  
 Universal approximation

Socratic method Superhuman Superhuman





AlphaGo Zero achieved superhuman performance  
Demis Hassabis AlphaGo

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[1]

Cracking Go Deep Blue AlphaGo Alpha

<http://www.alphago-games.com/> AlphaGo Zero AlphaGo Zero  
<https://www.101weiqi.com/chessbook/player/38348/>

[4] Alpha AlphaGo Master 60+3

AlphaGo Master AlphaGo Master

[5]

Crazy Stone Alpha Alpha

Alpha

Alpha Google AlphaGo AlphaGo Zero AlphaGo Human level artificial intelligence Alpha

Google/Deepmind Alpha

[6] superhuman Alpha [6]

Deepmind Alpha Nature Magazine Alpha

[7] <http://www.alphago-games.com/> Full Strength of Alphago Zero, i.e. Final Form 40 Blocks 20 Blocks Not Full Strength of Alphago Zero Alphago Zero superhuman

[8]

[9] 2012 "Show, don't tell" Socratic method tell and discuss

Ideas are cheap

[10] "Go gaming is strictly defined within a very small space. Industrial automations are typically designed in well controlled environments, but not strictly defined. Car driving is regulated, but the environment is not well controlled"

[11]

Alpha

[12] AlphaGo Master AlphaGo AlphaGo Alpha

[13] Dialogue Concerning the Two Chief Word Systems Socratic Method

AlphaGo

